

CLAIMS

1. A method of producing a metal hydroxide, in particular magnesium hydroxide, from a salt solution, wherein a metal is firstly precipitated from the salt solution and the salt solution-bearing suspension produced in that way is then filtered,  
5 characterised in that

the suspension is filtered through at least one filter (3, 6-8, 13-17) of a cross-flow filtration installation (3, 6-8, 13-17), and that a permeate produced by filtration of the suspension is fed to the cross-flow filtration installation (3, 7, 14-17) again.

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2. A method according to claim 1 characterised in that the permeate from one of the filters (8, 15, 17) is fed to at least one other filter (7,14, 16) of the cross-flow filtration installation.

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3. A method according to claim 1 or claim 2 characterised in that the suspension is filtered by means of a membrane filter.

4. A method according to claim 3 characterised in that the suspension is filtered by means of a membrane filter having pores whose pore width is up to 30  
20 micrometres.

5. A method according to claim 4 characterised in that the suspension is filtered by means of a membrane filter having pores whose pore width is between 0.05 and 0.5 micrometre.

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6. A method according to at least one of the preceding claims characterised in that for precipitation of the metal the salt solution is fed to a reaction container (1, 5, 10) in which the metal is precipitated in the form of metal hydroxide.

7. A method according to at least one of the preceding claims characterised in that a concentrate filtered from the filter (8, 17) is purified to obtain the metal hydroxide.

5           8. A method according to at least one of the preceding claims characterised in that the suspension is filtered by means of at least two filters (6-8, 13-17), wherein a first filter is arranged upstream of a second filter (6-8, 13-17).

9. A method according to claim 8 characterised in that the permeate passing  
10 through the second filter (8, 15, 17) is passed back to the first filter (7, 14, 16).

10. A method according to claim 9 characterised in that a concentrate produced at the second filter (8, 15, 17) is purified in a purification unit for obtaining metal hydroxide.

15           11. A method according to at least one of claims 8 to 10 characterised in that pure water is fed to at least one of the filters (8) for flushing out at least one soluble salt.

20           12. A method according to at least one of claims 8 to 11 characterised in that the permeate passing through the first filter (7) is fed to a reverse osmosis unit (9).

13. A method according to claim 12 characterised in that the pure water obtained by means of the reverse osmosis unit (9) is fed to the second filter (8).

25           14. A method according to at least one of claims 8 to 13 characterised in that the suspension is filtered by means of the first and second filters (3, 6-8, 13-17), wherein the filters (3, 6-8, 13-17) are arranged in a respective filter stage and a first filter stage is arranged upstream of a second filter stage.

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15. A method according to claim 14 characterised in that the permeate passing through the filter (8) of the second filter stage is fed to the first filter stage.

16. A method according to claim 14 or claim 15 characterised in that  
5 connected upstream of the first filter stage is a further filter stage (6) with which the suspension is subjected to pre-filtration.

17. A method according to claim 16 characterised in that the concentrate from the further filter stage (6) is passed into the first filter stage and that the permeate  
10 from the further filter stage (6) is fed to a reverse osmosis unit.

18. A method according to claim 17 characterised in that the permeate from the reverse osmosis unit is passed into the purification unit in accordance with claim  
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19. A method according to at least one of the preceding claims characterised in that precipitation of the metal is effected by means of milk of lime or caustic soda solution.

20. Apparatus for carrying out a method of producing a metal hydroxide, in particular magnesium hydroxide, from a salt solution, wherein firstly a metal is precipitated from the salt solution and the suspension which contains salt solution in that way is then filtered, comprising

- at least one reaction container (1, 5, 10) for precipitation of the metal from  
25 the salt solution, and
  - at least one cross-flow filtration unit having at least one filter (3, 6-8, 13-17) for filtering of the suspension, through which a permeate passes, characterised in that
- there is provided at least one conduit for recycling the permeate into the or a  
30 further cross-flow filtration unit (7).